

TABLE HH-4 TO SUBPART HH OF PART 98—LANDFILL METHANE OXIDATION FRACTIONS

Under these conditions:	Use this landfill methane oxidation fraction:
I. For all reporting years prior to the 2013 reporting year	
C1: For all landfills regardless of cover type or methane flux	0.10
II. For the 2013 reporting year and all subsequent years	
C2: For landfills that have a geomembrane (synthetic) cover with less than 12 inches of cover soil for the majority of the landfill area containing waste	0.0
C3: For landfills that do not meet the conditions in C2 above, and for which you elect not to determine methane flux	0.10
C4: For landfills that do not meet the conditions in C2 above and that do not have a soil cover of at least 24 inches for a majority of the landfill area containing waste	0.10
C5: For landfills that have a soil cover of at least 24 inches for a majority of the landfill area containing waste and for which the methane flux rate is less than 10 grams per square meter per day (g/m ² /d)	0.35
C6: For landfills that have a soil cover of at least 24 inches for a majority of the landfill area containing waste and for which the methane flux rate is 10 to 70 g/m ² /d	0.25
C7: For landfills that have a soil cover of at least 24 inches for a majority of the landfill area containing waste and for which the methane flux rate is greater than 70 g/m ² /d	0.10

*Methane flux rate (in grams per square meter per day; g/m²/d) is the mass flow rate of methane per unit area at the bottom of the surface soil prior to any oxidation and is calculated as follows:

For Equation HH-5 of this subpart, or for Equation TT-6 of subpart TT of this part,

$$MF = K \times G_{CH_4} / SArea$$

For Equation HH-6 of this subpart,

$$MF = K \times \left(G_{CH_4} - \sum_{n=1}^N R_n \right) / SArea$$

For Equations HH-7 of this subpart,

$$MF = K \times \left(\frac{1}{CE} \sum_{n=1}^N \left[\frac{R_n}{f_{Rec,n}} \right] \right) / SArea$$

For Equation HH-8 of this subpart,

$$MF = K \times \left(\frac{1}{CE} \left\{ \sum_{n=1}^N \left[\frac{R_n}{f_{Rec,n}} \right] \right\} - \sum_{n=1}^N R_n \right) / SArea$$

Where:

MF = Methane flux rate from the landfill in the reporting year (grams per square meter per day, g/m²/d).

K = unit conversion factor = 10⁶/365 (g/metric ton per days/year) or 10⁶/366 for a leap year.

SArea = The surface area of the landfill containing waste at the beginning of the reporting year (square meters, m²).

G_{CH_4} = Modeled methane generation rate in reporting year from Equation HH-1 of this subpart or Equation TT-1 of subpart TT of this part, as applicable, except for application with Equation HH-6 of this subpart (metric tons CH_4). For application with Equation HH-6 of this subpart, the greater of the modeled methane generation rate in reporting year from Equation HH-1 of this subpart or Equation TT-1 of this part, as applicable, and the quantity of recovered CH_4 from Equation HH-4 of this subpart (metric tons CH_4).

CE = Collection efficiency estimated at landfill, taking into account system coverage, operation, and cover system materials from Table HH-3 of this subpart. If area by soil cover type information is not available, use default value of 0.75 (CE4 in table HH-3 of this subpart) for all areas under active influence of the collection system.

N = Number of landfill gas measurement locations (associated with a destruction device or gas sent off-site). If a single monitoring location is used to monitor volumetric flow and CH_4 concentration of the recovered gas sent to one or multiple destruction devices, then $N=1$.

R_n = Quantity of recovered CH_4 from Equation HH-4 of this subpart for the n th measurement location (metric tons).

$f_{Rec,n}$ = Fraction of hours the recovery system associated with the n th measurement location was operating (annual operating hours/8760 hours per year or annual operating hours/8784 hours per year for a leap year).

[78 FR 71971, Nov. 29, 2013]

Subpart II—Industrial Wastewater Treatment

SOURCE: 75 FR 39767, July 12, 2010, unless otherwise noted.

§ 98.350 Definition of source category.

(a) This source category consists of anaerobic processes used to treat industrial wastewater and industrial wastewater treatment sludge at facilities that perform the operations listed in this paragraph.

- (1) Pulp and paper manufacturing.
- (2) Food processing.
- (3) Ethanol production.
- (4) Petroleum refining.

(b) An *anaerobic process* is a procedure in which organic matter in wastewater, wastewater treatment sludge, or other material is degraded by micro-organisms in the absence of oxygen, resulting in the generation of CO_2 and CH_4 .

This source category consists of the following: anaerobic reactors, anaerobic lagoons, anaerobic sludge digesters, and biogas destruction devices (for example, burners, boilers, turbines, flares, or other devices).

(1) An *anaerobic reactor* is an enclosed vessel used for anaerobic wastewater treatment (e.g., upflow anaerobic sludge blanket, fixed film).

(2) An *anaerobic sludge digester* is an enclosed vessel in which wastewater treatment sludge is degraded anaerobically.

(3) An *anaerobic lagoon* is a lined or unlined earthen basin used for wastewater treatment, in which oxygen is absent throughout the depth of the basin, except for a shallow surface zone. Anaerobic lagoons are not equipped with surface aerators. Anaerobic lagoons are classified as deep (depth more than 2 meters) or shallow (depth less than 2 meters).

(c) This source category does not include municipal wastewater treatment plants or separate treatment of sanitary wastewater at industrial sites.

[75 FR 39767, July 12, 2010, as amended at 76 FR 73903, Nov. 29, 2011]

§ 98.351 Reporting threshold.

You must report GHG emissions under this subpart if your facility meets all of the conditions under paragraphs (a) or (b) of this section:

(a) *Petroleum refineries and pulp and paper manufacturing.*

(1) The facility is subject to reporting under subpart Y of this part (Petroleum Refineries) or subpart AA of this part (Pulp and Paper Manufacturing).

(2) The facility meets the requirements of either § 98.2(a)(1) or (2).

(3) The facility operates an anaerobic process to treat industrial wastewater and/or industrial wastewater treatment sludge.

(b) *Ethanol production and food processing facilities.*

(1) The facility performs an ethanol production or food processing operation, as defined in § 98.358 of this subpart.

(2) The facility meets the requirements of § 98.2(a)(2).

(3) The facility operates an anaerobic process to treat industrial wastewater